The Carbon Clever Challenge

A 'How to' Guide.

The Carbon Clever Challenge is made up of three physical games that allow children to connect with the habitats of the Carbon Landscape: namely mosslands, the Mersey Wetlands Corridor and flashes. By playing the games, students not only explore the ecology of three habitats but also explore how human activity can often negatively impact these habitats. Once the games are learnt and played, your students can then alter the rules to change the game in favour for nature.

All games can be played either indoors or outdoors and require minimal resources and set up time.

How to get started

The Carbon Clever Challenges comes with four films:

An Introduction to the Carbon Landscape and Carbon Clever,

Mossland Game,

Mersey Wetlands Corridor Game and,

Flashes Game.

We advise that you watch the films prior to playing the games with your students – to familiarise yourself with the themes and rules of the games.

Once you are ready to set the Carbon Challenge to your students – play them the Introduction film. When they accept the challenge – go play!

The games can be played back-to-back in one day (1.5 hours should do it), individually throughout the week, or whenever you feel like. Just pick them up at a time best for you.

Each game comes with a lesson plan to guide you along the way.

Have fun!

A ROUGH GUIDE TO TIMINGS

Intro Film – **1.43**

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Mosslands Film – **5.12**

Set up – **2 mins**

Game Play - **10 mins***

Total – ≈17 mins

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Mersey Wetlands Corridor Film – **5.51**

Set Up – **3 mins**

Game Play - **15 mins***

Total – ≈25 mins

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Flashes Film – **11.17**

Set up – **5 mins**

Game Play - **15 mins***

Total – ≈30 mins

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Total (if played in one session) – **≈75–90 mins**

***Including discussion time, rule changes and 2 x play**

Mosslands Game Lesson plan

RESOURCES	NONE (Just a large space to play in)
FILM LENGTH	5:12
SET UP/GAMEPLAY	12 mins
NUMBERS NEEDED TO PLAY	Works best with the whole class
TEAMS	5 x PEAT EXTRACTORS Everyone else is COTTON GRASS *(TIP: Use coloured bibs if you have them, to distinguish between the extractors and cottongrass)*
GAMEPLAY	COTTONGRASS players lay face down on the floor in a 'star fish' position. They must connect to another COTTONGRASS player by holding onto/touching their hand/foot. PEAT EXTRACTOR players have 30 SECONDS to touch as many COTTONGRASS players on the back as possible. If a COTTONGRASS player is touched on the back, they must curl up into a ball as they are now a pile of peat. *(TIP: if you're playing outdoors and it's too wet to lay down – the cottongrass players can stand up and connect by standing in a 'T-Pose' and touching fingers)*
LENGTH OF PLAY	The game ends when all the COTTONGRASS players are turned to piles of peat or after 15 seconds, whichever comes first. (THIS IS A VERY FAST GAME!)
EXPECTED GAME OUTCOME	It is expected that all the COTTONGRASS players will be turned to piles of peat.

DISCUSSION IDEAS	At the end of the game, had all the cottongrass been removed? Did everyone end up as piles of peat? QUESTION: Are the rules of the game fair? REAL LIFE IMPACT: If all the cottongrass is removed, then there is no longer a habitat for the Manchester Argus butterfly – which has only just been reintroduced to Greater Manchester. Without its habitat the butterfly would become locally extinct yet again.
	The reason the cottongrass is removed is so that the peat underneath it can be extracted. The peat is then used primarily in garden centres to sell in compost. QUESTION: How can we reduce peat extraction? POTENTIAL ANSWER: Don't buy peat-based compost to use at home.
	The Manchester Argus butterfly needs space to find food and lay its eggs. To move around the landscape, it needs cottongrass to be connected – large areas of cottongrass with no big gaps breaking it up. QUESTION: What can we do to connect areas of cottongrass together? POTENTIAL ANSWER: Plant more cottongrass where there are big gaps.
	The removal of cottongrass from the mossland is an example of physical damage to nature. QUESTION: can you think of any other ways humans physically damage nature?
POTENTIAL RULE CHANGES	To change the game in favour for nature you could: 1. Reduce the number of PEAT EXTRACTORS 2. Set up a rule that only a percentage of COTTONGRASS can be removed

Wetlands Game Lesson Plan

RESOURCES	Lots of balls (poison) (Tennis ball sixed. Ball pool balls work best) Bucket/container to hold them in (One large on or several smaller ones)
FILM LENGTH	5:51
SET UP/GAMEPLAY	18 mins
NUMBERS NEEDED TO PLAY	10-15 minimum Works best with the whole class
TEAMS	4 x POISONERS 1 x HERO Everyone else is a great crested NEWT *(TIP: Use coloured bibs if you have them, to distinguish between the poisoners, hero, and newt)*
GAMEPLAY	NEWTS get a 10 second head start to move around the room. They can only CRAWL on all fours. POISONERS take as many balls (poison) as they like from the container and must touch, on the back, as many NEWTS as possible. If a NEWT is touched on the back with a ball, they are now poisoned and must take hold of the ball and lay on their back until rescued by the HERO. The HERO can rescue a NEWT by taking the ball away from them and then returning that ball back to the container. HEROES can run but they can only carry ONE ball at a time. *(TIP: If playing outdoors and the floor is unsuitable for crawling, newts can hop like a frog instead, and hold the ball on top of their head to show they are poisoned)*
LENGTH OF PLAY	3 minutes OR When every NEWT is poisoned and there are no balls (poison) left in the container.

EXPECTED GAME OUTCOME	All/nearly all the NEWTS are poisoned. The HERO is exhausted from running back and forth trying to resource the NEWTS. Those NEWTs that are rescued are soon poisoned again.
DISCUSSION IDEAS	At the end of the game, were all the newts poisoned? And if they weren't all poisoned had the surviving newts been poisoned at some point in the game? QUESTION: Are the rules of the game fair? REAL LIFE IMPACT: Great crested newts are rare in the UK because most of their ponds have been removed for farming, and those that survive have then been poisoned by pesticides. Conservationists (the heroes) help by creating new ponds, but these are still susceptible to poisons.
	When we say the word poison, we mean anything that ends up in the wetland habitat that can't be used by nature. Instead, it harms nature. Pesticides from farming and gardens are just one example of a poison that can get into the wetland habitat QUESTION: Can you think of any other poisons that can end up in wetlands. Remember poison means anything that ends up in a habitat that can't be used by nature. POTENTIAL ANSWER: Plastic.
	Pesticides from farms cause damage to wetlands. Harming the wildlife that live there. QUESTION: Should we get rid of all farms? POTENTIAL ANSWER: No, we need farms to produce food so we can eat. And farmers use pesticides to protect their crops from insects. They do this so that they can produce as much food as possible.

	SECONDARY QUESTION: Are their alternatives to pesticides? POTENIAL ANSWER: Yes. Work with nature. Introduce a pest's natural enemy (biocontrol). Plant more than one type of crop together (companion planting) – tomatoes repel pests that eat cabbages, and basil fend of flies to protect tomatoes. Deterrents found in nature (biopesticides) – bacteria and fungi that deter pests.
POTENTIAL RULE CHANGES	To change the game in favour for nature you could: 1. Reduce the number of POISONERS 2. Make some POISONERS become a HERO 3. Allow the HEROES to carry more than one ball 4. Make the POISONERS walk 5. Move the ball container further away from the NEWTS 6. Create a nature reserve for the NEWTS – a place where POISONERS aren't allowed. NB. The NEWTS must always crawl, and they can't suddenly evolve wings/buy a jetpack!

Flashes Game Lesson Plan

RESOURCES	Lots of balls (CO_2) (Tennis ball sized. Ball pool balls work best) 6 x buckets/containers filled with the balls
FILM LENGTH	11:17
SET UP/GAMEPLAY	20 mins
NUMBERS NEEDED TO PLAY	10 minimum Works best with the whole class
TEAMS	6 x NATURE players 1 x HERO Everyone else is a coal burning POWER PLANT *(TIP: Use coloured bibs if you have them, to distinguish between the nature players, hero, and power plants)*
GAMEPLAY	Place THREE of the ball (CO_2) filled buckets in a large triangle on the floor. Place TWO NATURE players at each bucket. They must move the balls around the triangle of buckets in a cycle. To do this, the NATURE players each pick up a single ball and WALK CLOCKWISE to the next bucket and place their ball down. They then walk back to their starting point and do it again. NATURE players must move constantly. Picking up a ball, walking to the next bucket, putting it down and then starting again. The HERO stands next to any of the buckets in the triangle. Wherever they are stood, that bucket is protected. The POWER PLANT players must try and make the buckets in the triangle overflow. They do this by picking up balls from the remaining THREE buckets (not in the triangle) and add them to the buckets in the triangle. POWER PLANT players can carry as many balls as possible and can run.

	POWER PLANT players CAN'T add any balls to a bucket protected by the hero. NO ONE can pick up balls from the floor.
LENGTH OF PLAY	3 minutes OR When the POWER PLANT players run out of balls (CO_2).
EXPECTED GAME OUTCOME	The buckets in the triangle overflow. Balls end up all over the floor. The hero is exhausted trying to protect all three buckets.
DISCUSSION IDEAS	At the end of the game, were all the buckets in the triangle overflowing? Was the HERO tired of running between buckets? QUESTION: Are the rules of the game fair? REAL LIFE IMPACT: Carbon dioxide exists in nature. It moves around in a natural cycle. From animals, to trees, to the soil, and back to plants. Constantly in a cycle. And this cycle is often in balance. However, the amount of carbon dioxide released into nature from coal burning powerplants, petrol fuelled transport and carbon powered factories causes this natural cycle to become overwhelmed. Which in turn, causes climate change. There's just too much CO_2 - something that exists naturally in nature, but too much of it is a bad thing (like eating too much ice-cream, a little is good, too much will make you sick). Conservationists, the use of renewable resources (e.g. solar and wind power), active transport infrastructure (e.g. cycle lanes), and electric cars help to reduce CO_2 production.
	Car travel produces CO_2 QUESTION: How can we reduce car usage.

	POTENTIAL ANSWER: Cycle/walk more. If possible, use an electric car. Share car journeys.
	Habitats in the Carbon Landscape such as mosslands, store CO_2 in the ground due to their large presence of peat. They also actively remove CO_2 from the atmosphere. QUESTION: How can we help mosslands store and remove more CO_2 POTENTIAL ANSWERS: Reduce/stop peat removal. Support mossland conservation through re-wetting and vegetation planting programmes.
	Trees and plants remove CO2 from the atmosphere. QUESTION: How can we help trees and plants remove more CO_2 from the atmosphere POTENTIAL ANSWER: Plant more trees. Don't remove trees/greenspaces in urban areas. Re-wild greenspaces.
	Conservationists, people who use renewable energy, cycle users, tree planters and walk-to-schoolers are all heroes – because they reduce CO_2 production. QUESTION: How else can we be heroes? How else can we reduce our carbon footprint?
POTENTIAL RULE CHANGES	To change the game in favour for nature you could: 1. Reduce the number of POWER PLANT players 2. Add another HERO 3. Add more NATURE players 4. Allow some NATURE players to pick up balls from the floor and add them to the buckets (like mosslands storing CO_2) 5. Make the POWER PLANT players walk 6. Move the POWER PLANT players further away from the NATURE players 7. Make the POWER PLANT players only carry one ball.

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Carbon Landscape